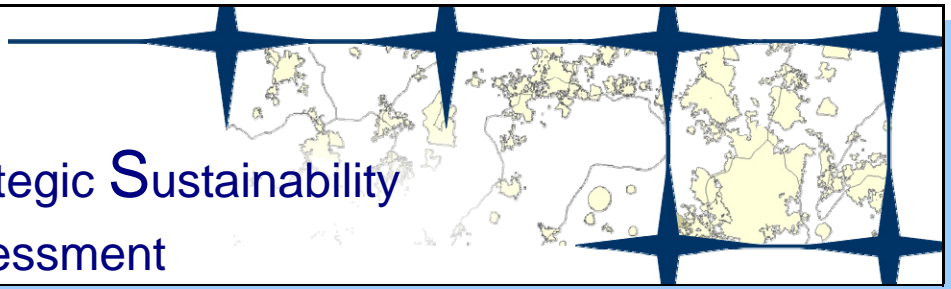




**US Army Corps
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Strategic Sustainability Assessment



Elisabeth Jenicek, Donald Fournier, Natalie Myers, and Brian Deal

Regional Challenges for Sustainable Military Installations

Sustainability has become an important issue of broad public concern. The availability of clean air and water, secure and reliable energy resources, open space, and pollution prevention activities are not only essential for improving the livability of our communities, they are also imperative for the successful long-term operations of our military installations. Demographic and lifestyle shifts increase communal demand for land and other limited resources. As these demands grow, they place pressures on infrastructure, resource availability, and the fundamental long-term sustainability of our regions and the installations that they support.

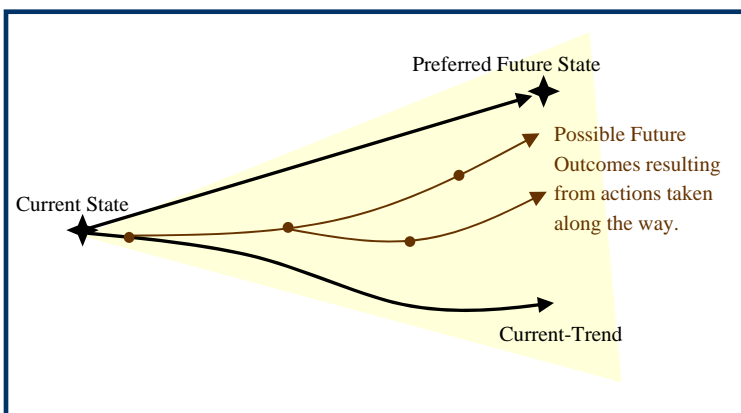
Military installations represent an enormous capital investment in infrastructure, land, and personnel. While installations are critical to local and state economies, they also sustain defense, security, and military readiness. Some military installations' economic and environmental contributions to the local community are becoming outweighed by their perceived incompatibilities such as noise, dust, shared resource competition, land use, land value, and land availability, all of which arise as the local community expands and available resources become scarce. Eventually the installation's benefit to the community may be surpassed by the community's requirement for resources. The installation can then be perceived as a barrier to continued local growth and development. These potentially "unsustainable" installations face a number of risks, including downsizing, realignment, and even closure.

Looking Beyond the Present Condition

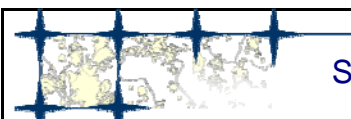
Historically, national sustainability efforts have tended to be broad in scope and to rely on overly general solutions. Conversely, localized efforts tend to be narrow in scope and ignore regional opportunities and integrated solutions. Successful planning actions achieve integration through regional strategies and alliances. Efforts devoted to addressing sustainability at the regional level within the Department of Defense are limited in geographic and temporal scale; little attention or funding is devoted to evaluating regional impacts on sustainability issues.

Internal installation sustainability efforts have spawned a number of strategic programs designed to assess threats against installation mission accomplishment and to foster partnering opportunities to support mission sustainment. Readily available data, combined with today's computational capabilities, allows geographic analyses of resource availability and constraints. Current programs typically assess historic trends or evaluate the current status of an installation's ability to sustain its mission. The scope of these analyses is often limited in geography and time.

In response to these limitations, the Strategic Sustainability Assessment (SSA) program was created to assess the future sustainability of military installations in the context of their local regions. SSA's main supposition is that actions taken or not taken today (on- and off-post) will impact future military readiness capabilities. Complementary forecasting and back-casting tools are used to anticipate potential changes and propose potential solutions to enhance an installation's sustainability over time.



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A New Approach: SSA

The SSA is an outgrowth of the Army Strategy for the Environment that sets forth the goal of achieving the triple bottom line of Mission, Environment, and Community. The SSA is forward looking and is intended to inform Army policy and regional policy makers outside the fence. The project has several byproducts, for example, building beneficial partnerships with regional organizations also working on sustainability, as well as creating opportunities for further dialogue with internal and external stakeholders.

The complementary tools of forecasting and backcasting give regional stakeholders a unique perspective on potential policy and investment choices. Forecasting uses the dynamic spatial modeling techniques of the Land use Evolution and impact Assessment Model (LEAM) to project potential future urban transformations and their implications on the social, environmental, and economic fabric of the region. Backcasting is used to determine sets of strategic interventions designed to offset the projected impacts of growth and development, enabling the region to attain a sustainable future as defined by the desires and goals of local and regional stakeholders.

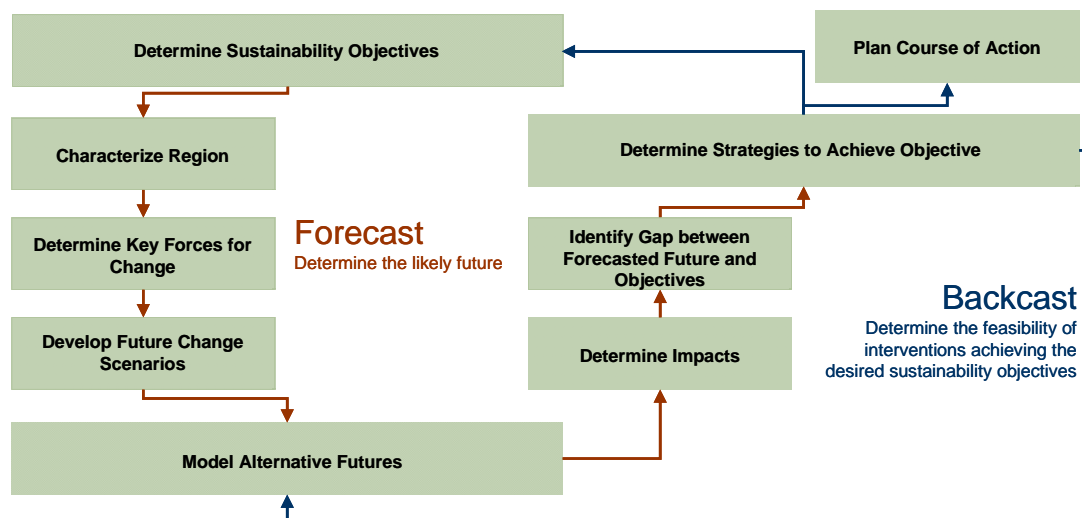
The goal of the SSA process is to identify solutions and outcomes to sustainability and resource issues on a regional scale and, when possible, to examine cumulative effects on that region by addressing large-scale sustainability issues and solutions that span well beyond current installation boundaries. This information can be used by decisionmakers to change course towards a more sustainable future.

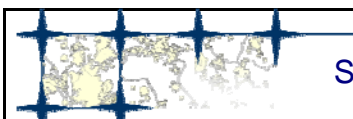
SSA Process: A Series of Discrete Steps

The SSA is a regional approach to systematically assess and develop policies and interventions. The SSA builds on previous efforts and links to related projects on a regional basis to leverage resources. It incorporates the principal of spiral development and is flexible and transportable.

While the SSA methodology was developed as a sequential process, the individual components are “stand alone.” They can be accomplished as a whole or as needed to support a variety of strategic programs. Not all of the components are necessary to support specialized analyses. The SSA uses existing data and tools, tailoring them for the process and, as needed, for the unique analysis requirements of a region.

The SSA methodology includes the following steps: (1) determine regional sustainability objectives, (2) characterize the region, (3) determine key forces for change, (4) develop future scenarios, (5) model alternate futures, (6) determine the impact of alternate futures, (7) identify the gap between forecasted future and sustainability objectives, and (8) determine strategies required to achieve objectives using backcasting. The results of the complete analysis provide information to support development of a course of action to achieve the desired future for the region.

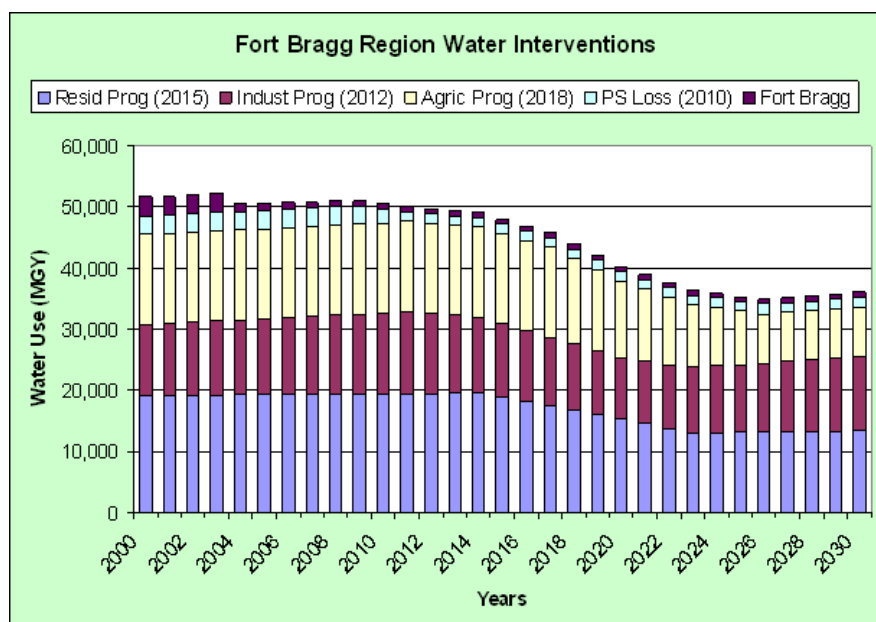




Regional Sustainability Solutions

Regional sustainability objectives are a set of long-term goals as defined by the region. Therefore, participation of regional stakeholders is crucial in developing and achieving these goals. Some ways to obtain stakeholder input are conducting workshops, using an interactive website, or employing mailed surveys. Recurring issues of concern include air quality, water quantity and quality, threatened and endangered species, renewable and non-renewable energy availability, housing availability and affordability, education, and the installation's ability to test and train.

Regional stakeholder participation is also crucial in developing potential scenarios that influence patterns of growth. A scenario is a potential policy or investment decision important to the region. These can include, for example, military personnel changes, infrastructure improvements, or environmental protection areas. The LEAM model forecasts the potential changes and implications that these decisions might incur. It uses a base map of existing land use, along with the scenario inputs being tested, to project the potential composition of future land uses. These potential outcomes are then assessed for their social, environmental, or economic implications.



LEAM results are presented in a series of maps, tables, and graphs that describe possible futures. A variety of modeling tools are then used to assess their potential implications. Backcasting techniques are used to simultaneously derive the set of issue-based potential strategic interventions to attain the region's desired future. The gap between the desired and predicted future state informs the selection of these strategic interventions. Interventions can include policy measures, technological solutions, or planning tools.

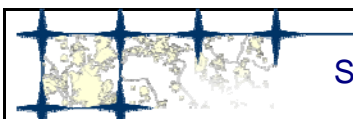
A series of iterations of the growth model are run, implementing a variety of interventions at different points in time, to determine an optimum array of strategies to achieve a sustainable future. These are

sometimes called "what if" model runs. The figure to the left shows the impact of potential water conservation measures. In some cases, the desired future may not be attainable under any circumstance and the model iterations will suggest a revised set of sustainability objectives.

SSA Status: Fall Line Region Sustainability Assessment

The SSA Regional Pilot Project is a beta application of the SSA process to the Fall Line region of the Southeastern United States. The area stretches from Alabama across Georgia and into the Carolinas. The Fall Line Region is home to several Army installations—Forts Benning, Gordon, Jackson, and Bragg; two Air Force bases; other Federal facilities; and the metropolitan areas of Columbus, GA; Columbia, SC; and Fayetteville, NC. Public and private residents in the region share an interest in preserving precious regional resources (including Federally endangered species), and in the restoration of forested areas and wetland ecosystems.

The Fall Line region provides an opportunity to build on prior scientific research, sustainability planning efforts, and the strength of existing regional partnerships. Fort Bragg pioneered the Army's Installation Sustainability Planning (ISP) process in 2003 and the Sustainable Sandhills non-profit emerged as a regional leader in sustainability. Forts Benning and Jackson are also completing the ISP process. The Army Compatible Use Buffer program was modeled on trend-setting work in the Fort Bragg region. In addition, Joint Land Use Studies have been completed at Bragg and are ongoing at Benning. The recent addition of the BRAC Regional Task Force in the Bragg region strengthens the set of strong, connected, forward-looking organizations planning for a sustainable future for the region. Scenarios for the



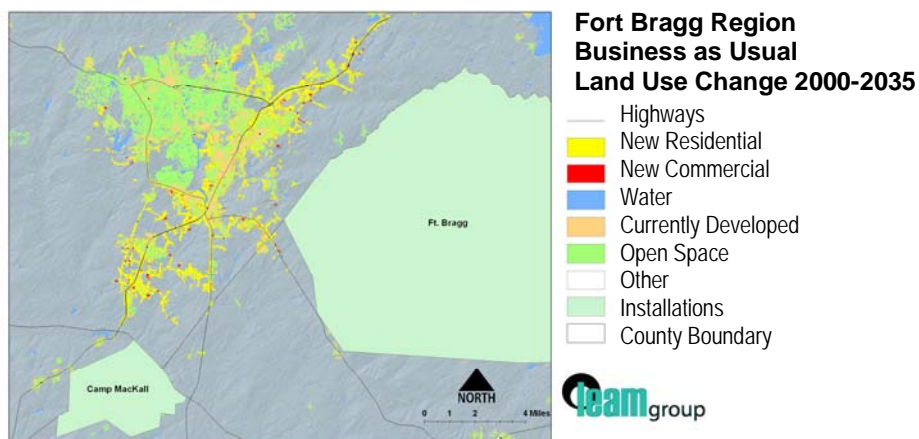
Fall Line Region incorporate a series of population growth options including the addition of new soldiers, civilians, and contractors to the region as a result of BRAC 2005, the Modular Army, and the return of troops from overseas.

Preliminary growth results for the eight-county Fort Bragg sub-region of the Fall Line predict a population change of 35% over the next 30 years resulting in a demand for over 48,000 additional acres of residential land and 2000 more acres of commercial/industrial land. This land use change comes at the expense of open space and agricultural and forested lands. The projected loss of these lands is over 50,000 acres by 2035. The impacts will be felt in terms of new requirements for housing and schools. Large increases in energy and water consumption are also projected. Land use changes impact all aspects of the environment leading to species diversity loss, water regeneration loss, and higher density of residential and commercial growth near the edges of military installations.

Benefits and Further Applications

The SSA shows great promise to support a variety of regional assessment programs. The ability to not only project future growth, but also to assess the impacts of that growth on key military and regional goals strengthens existing analytical methodologies and allows decisionmakers to plan for interventions and actions that ameliorate the impacts of land use change and reduce future resource conflicts and mission sustainment problems.

Environmental and other resource impacts are becoming more important over time as population growth and relocation result in land use changes. Regional planning is required to address these issues. The SSA provides a transportable methodology for addressing future sources of conflict today in any region of the country, or wherever military installations are located. Outcomes of the SSA process inform installation planners in a regional context. Benefits of the process include analytical products and partnerships that empower regional decisionmakers to plan for a sustainable future. Installation staff benefit from a long-term visualization of key sustainability issues to inform the conversation and share with regional stakeholders and other leaders.



The SSA provides specific products that develop and predict impacts of land use change and determine strategic interventions that enhance the triple bottom line. Feedback from the analyses enables stakeholders to refine regional sustainability objectives. The SSA process also informs development of a regional plan of action to proactively address the adverse impacts of land use change, determine when action must be taken, and determine how quickly current trends can change.



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SSA Website

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